

*Plocamium* (continued)  
*procerum*, J. Ag.  
*Gymnogongrus*  
*furcellatus*, J. Ag.  
*vermicularis*, J. Ag.  
*Callophyllus*  
*asperata*, Harv.  
*Gigartina*  
*decipiens*, Hook. f.  
*Iridæa*  
*micans*, Bory.  
*lanceolata*, Harv.

*Epymenia*  
*obtusa*, Kuetz.  
*Chylocladia*  
*cespitosa*, Harv.  
*Ceramium*  
*uncinatum*, Harv.  
*Ptilota*  
*formosissima*, Mont.  
*Griffithsia*  
*antarctica*, H. f. and Harv.  
*Ballia*  
*callitricha*, Mont.

## CHLOROSPERMEE.

*Caulerpa*  
*sedoides*, Ag.  
*brownii*, Endl.  
*furcifolia*, H. f. and Harv.  
*Codium*  
*tomentosum*, Ag.  
 - *adhaerens*, Ag.  
*Bryopsis*  
*plumosa*, Ag.  
*Porphyra*  
*lacinata*, Ag.  
*capensis*, Kuetz.

*Ulva*  
*latissima*, Linn.  
*rigida*, Ag.  
*crispa*, Lightf.  
*bullosa*, Roth.  
*Enteromorpha*  
*intestinalis*, Grev.  
*clathrata*, Grev.  
*Conferva*  
*darwinii*, Kuetz.  
*Chroolepus*  
*aureus*, Harvey.

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ART. XXXIX.—*Descriptions of some New Zealand Lichens, collected by John Buchanan in the Province of Wellington.* By JAMES STIRTON, M.D., Glasgow. Communicated by JOHN BUCHANAN.

[Read before the Wellington Philosophical Society, 16th January, 1874.]

*Baeomyces pertenuis*, Stirton.

THALLUS scarcely discernible; apothecia pale buff, concave, with a paler border, attached by a central axis; spores eight, exceedingly minute, elongate-elliptical, apparently simple, although there are occasional indications of a septum which a  $\frac{1}{8}$  objective cannot distinctly resolve, in nearly single file in asci, which scarcely differ in size or thickness from the ordinary paraphyses. A section presents the characteristic appearance of lichens of this genus. In such an extreme case as this, it is necessary to remark that I have carefully discriminated between the oil globules that are seen in the paraphyses of one or two of the species of this genus and these minute spores, which still preserve their outline when free of the asci, and which, by the aid of a better objective, I find now are nearly constantly three-septate.

On trunks of tree-ferns, Botanical Garden, Wellington.

*Sticta hirta*, Stirton.

Notwithstanding the varied forms assumed by *Sticta urvillei*, I am tempted to elevate into the rank of a species one of the several specimens sent.

Thallus widely expanded, reticulate-foveolate, broadly and roundly lobed, covered in many places with dense clusters of yellow isidiose efflorescence, under surface dark brown, densely tomentose; apothecia reddish brown merging into black, margin composed of a mass of radiating isidiose excrescence, which, in many instances, almost covers the disk; spores as in the variety *colensoi*.

On bark of trees, Kaka Hill, Wellington.

*Psoroma implexa*, Stirton.

Thallus yellowish brown, smooth above, closely adherent, intricately divided into small lobes, which are roundly lacinated, under surface white, tomentose (much more so than usual), attached to the bark by a dense mass of coarse, stiff, black, branching rhizinae, which extend considerably beyond the thallus; apothecia moderate, brown, surrounded by a deeply incised lobular inflexed thalline margin, which, in a young state, almost conceals the disk; spores eight, simple, elliptical, moderate; paraphyses not discrete, agglutinate at their apices; hypothecium yellowish brown, grumous.

I have given a rather minute description of a lichen which has puzzled me considerably, mainly for the purpose of calling attention to it, as I cannot pretend to an intimate knowledge of this intricate and perplexing genus. The chemical reactions of K and C on the upper surface and medulla are (K—C—).

On rocks, Tinakori Hills, Wellington.

*Psoroma arthroophyllum*, Stirton.

Thallus greyish brown, thick, continuous, brownish black, and rough on the under surface, multifido-laciniate above; laciniae closely imbricated, ascending, broad, margins roundly crenate, their under surface somewhat paler; apothecia large, rufous, rugose margin elevated, granuloso-concrete; spores eight, colourless, spherical, crenulate, in nearly single file in asci; paraphyses indistinct.

This may be *Psoroma euphyllum* (Nyl.), of which no description is given in the "Flora of New Zealand," nor in any of the later papers to which I have access.

On bark of trees, Tinakori Hills, Wellington.

*Pannaria crustata*, Stirton.

Thallus dark greenish olive, squamuloso-crustaceous, areolate-diffract; squamules largish, rugose, round, with crenulate turned-up margins; hypothallus black, evident; apothecia reddish brown, moderate, flat, or somewhat

convex when matured, with a proper margin of same colour, and an elevated crenated thallocal margin, which is often separated from the former by a chink, pale within; hypothecium pale brown; epithecium brownish; paraphyses matted together at apices; spores eight, simple, ellipsoid, or more frequently one or other, or both apices acute; margins distinctly crenulate, moderate ( $\cdot 014 \times \cdot 008mm$ ).

On stones, Wellington.

*Squamaria thaumasta*, Stirton.

Thallus greyish white, tessellato-areolate, consisting of roundish umbonate particles closely set together, and yet quite distinct; cephalodia large, reddish brown, cracked in a radiating manner, and roundly lobed at the circumference; apothecia small, elevato-sessile, concave, reddish brown, rugose, with an elevated, smooth, inflexed border; spores eight, colourless, broadly elliptical, uniserial, one-septate. A beautiful lichen, and one that might constitute the type of a new genus.

On rocks and stones, Tinakori Hills and Kaiwarra Creek, Wellington.

*Squamaria gelida*, Linn.

The apothecium of this lichen is differently constituted from that in Britain, inasmuch as the thalline exciple resembles the cup of the acorn, while there is a proper border, smooth and prominent, surrounding the epithecium, which is itself white, pruinose, and rugose. I can see, however, little difference otherwise to warrant a separation.

On rocks and stones, Kaiwarra Creek and Hutt Road, Wellington.

*Thelotrema obovatum*, Stirton.

The spores of this lichen differ in shape from those of *Th. lepadinum*, and have altogether an appearance so peculiar that I have been tempted to elevate it into the rank of a species under the name given above. Thallus yellow, rimulose, uneven, slightly nodulated; apothecia hemispherical, crowded in some parts; ostium rounded, open, margin even; disk urceolate, scutiform, dark brown, proper margin inflexed; spores eight, colourless, obovate, sharp pointed at one end, rounded at the other, divided internally by numerous crossbars, which do not reach the margin; epispore beautifully crenulated.

These characteristics are constant, at least in every specimen examined. I have not seen *T. subtile*, but, judging from the description of it by Leighton in his Lichen Flora, I cannot reconcile myself to identifying the present plant with it.

On bark of trees, Tinakori Hills, Wellington.

*Lecidea kelica*, Stirton.

Thallus greyish white, thin, minutely rimuloso-areolate; areolæ smooth,

flat, or somewhat convex (K—C—); apothecia bright yellow (K red), convex, immarginate, generally clustered and then deformed; hypothecium pale; spores eight, straight or curved, colourless, elongato-elliptical, almost sub-cylindrical, one-septate; paraphyses indistinct, with reddish brown apices.

This lichen is peculiar in having attached to the hypothecium, or indeed forming part of it, little cushions composed of green granular matter, not gonidial cells, but rather as if their granular contents were set-free granular gonima, in fact; so that a microscopic preparation capable of showing the asci and spores has, to the naked eye, a bright lemon colour throughout. I cannot see the slightest trace of a margin even in very young apothecia, and, as the reaction is always as indicated above, I have no doubt this lichen is distinct, although it has certain affinities to *L. ehrhartiana* (Ach).

On bark of trees, Wainuiomata, Wellington.

*Lecida campylospora*, Stirton.

Thallus, in one specimen, white or greyish white, thin, continuous, almost papery (K—C—); in another, of a darker dingier colour, rimulose-areolate, areolæ flat or convex and somewhat granulate. Apothecia elevato-sessile; concave and contracted in a young state, afterwards expanded and flat, or even somewhat convex; cæcio-pruinose border thick, rounded, and inflexed; spores four, six, or eight, colourless, very large, bent at middle, one-septate with—in many instances—nuclei in the loculi, epispore crenulate; paraphyses dense, capillary; hypothecium pale yellow, grumous, subtended by the dense black receptacle. This is evidently allied to *L. marginiflexa* (Taylor), although quite distinct.

On bark of trees, Kaka Hill, Wellington.

*Lecidea maculosa*, Stirton.

Thallus whitish, thin, determinate, continuous or slightly rimulose, somewhat rugulose (Ky Cy); hypothallus black; apothecia black, sessile, flat, moderate, separate or conjoined, with a prominent black margin; spores eight, colourless, the great majority curved, ellipsoid, one-septate  $0.16 \times 0.07 \text{ mm}$ ; paraphyses slender, distinct, with black, very much enlarged, club-shaped extremities, which are matted together; thalamium pellucid; hypothecium a beautiful reddish brown, subtended by a pale stratum which rests on the black entire exciple.

On bark of trees, Tinakori Hills, Wellington.

*Melaspilea amphorodes*, Stirton.

Thallus dark ashy grey, rimulose, thin; apothecia small, black, prominent, flat in a young state, and smooth, with a slight border; convex immarginate and rugose, when mature. Section of apothecium pale throughout, seated on a brownish grumous stratum; paraphyses scattered, distinct, colourless,

filiform, densely matted together at their thickened apices; asci pyriform, lower extremity attenuated and easily detached, walls composed of a double hyaline membrane, with a broad intervening space resembling—in this respect—the epispore in *L. sanguinaria*; spores large, four, six, or eight, oblong-cylindrical, multiseptate, with longitudinal septa.

A remarkable phenomenon is seen in a microscopical preparation of this lichen of some months' standing, viz., filaments are seen arising from many detached spores—first, from the extremities; second, from the septa, or in a line with them. Whether this is the result of germination I cannot determine, as I have very few apothecia left and do not care to destroy more until I see whether it is possible to secure other specimens.

A very distinct and curious lichen.

On bark of trees, Tinakori Hills, Wellington.

*Lecidea insidens*, Stirton.

Thallus white, smooth, investing the leaves of *Dicranum menziesii* with a continuous layer, to which, also, the apothecia are attached by a central point; apothecia reddish brown, rugose, plane, surrounded by a smooth prominent border of the same colour; hypothecium pale red, grumous; spores eight, colourless, spherical, muralilocular; paraphyses discrete.

The spores are muralilocular, and not merely coarsely granular, while their outline, when free, is in the great majority of cases circular, although a few are to be seen somewhat oblong. The paraphyses are thickened at their apices, where they are of a brown colour and matted together.

Wainuimata, Wellington.

*Lecidea implicata*, Stirton.

Thallus white, smooth, thin, glaucous, rimulose (K—C—); apothecia large, sessile, flat or somewhat convex, pale buff colour, pruinose, rugose, border smooth, somewhat inflexed; paraphyses distinct, filiform, densely matted together, and giving off lateral filaments; hypothecium yellowish brown; spores eight, colourless, elliptical, large, coarsely granular. Disk of apothecia rendered slightly darker by K, but not red. This lichen has a proper margin, and as the apothecium is attached by a broad central basis, the thalline receptacle is seen covering it and the unattached portion, but ceases considerably below the proper margin. Spores  $0.43 \times 0.21$  mm.

On bark of trees, Karori Hills, Wellington.

*Lecidea contigua*, Fr.

A curious form growing on earth. The apothecia are sessile, and arranged in beautiful concentric rings; the border sharply defined and flat, being set at an angle to the surface—a disposition seen in a certain proportion of New

Zealand crustaceous lichens. The internal organization resembles exactly that so characteristic of this lichen.

On banks, Tinakori Hills, Wellington.

*Lecidea fuscolutea*, Dicks.

The chemical reactions are identical, viz., K, thallus yellow; apothecia crimson. The hypothecium is darker than in specimens from Ben Lawers, Scotland.

On bark of trees, Tinakori Hills, Wellington.

*Lecidea otagensis?* Nyl.

Thallus greyish white, smooth, thin, and nearly continuous; apothecia black, sessile, slightly concave, margined, afterwards slightly convex and immarginate, and somewhat rugose; spores eight, irregularly fusiform, thicker at one end, and shaped like an Italian *f*; septa varying from two to six; hypothecium pale; paraphyses not distinct, their apices black and closely matted together, as in many others of the New Zealand lichens.

The shape of the spores, as indicated above, is constant throughout several specimens examined, and it is noticeable that the curve at the thicker end is invariably that of a shorter radius vector.

Until I saw Dr. Lauder Lindsay's paper, in the "Edinburgh Philosophical Transactions," on lichens and fungi of New Zealand, I felt satisfied in identifying this lichen with *L. otagensis* from Dr. Nylander's description; but the shape of the spores, as figured by Dr. Lindsay, is quite at variance with what I have seen and described. The whole of a thin section has a dingy aspect, and the hypothecium is not dingier than the rest, perhaps more pellucid.

On bark of trees everywhere round Wellington.

*Lecidea rivulosa*, Ach.

So far as I know, this is the first notice of this common lichen having been found in New Zealand. It differs in no essential from specimens found in Britain.

*Astrothelium prostratum*, Stirton.

Thallus well developed, continuous or rimulose, thin, yellowish white, merging into grey or cinereous; apothecia compound; receptacle black, large, broad (.02 to .07 in.), shallow, scarcely raised above the general surface; perithecia entire, irregular in outline, and all apparently opening into one ostiole, which shows on the surface; spores eight, uniserial, colourless at first—when the contents are coarsely granular—becoming brown when mature, with six crossbars, which assume the appearance of oval, coloured cells; paraphyses plentiful, filiform, simple.

On bark of trees, Wainuiomata, Wellington.



1

SENECIO ROBUSTA. n. s.  
nat. size.



2



3

RUBUS PARVIF. n. s.  
nat. size.